Plantation Doctor

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Plantation medical care played an important and integral part in the development of health care in Hawaii. By the turn of the century about 103,000 individuals, nearly one-third of the entire island population, were being cared for by plantation physicians. Plantation medicine helped to develop excellent medical care throughout Hawaii.

Historical Overview

Plantation medical care played an important and integral part in the development of health care in Hawaii. At one time plantation laborers numbered as high as 53,000. Including dependents there were about 103,000 individuals cared for by plantation physicians just after the turn of the century.

At first, provision of care to these people was probably philanthropic to a degree, but certainly its purpose was to maintain healthy productive workers. Significant concerns were malnutrition (with beriberi the predominate vitamin deficiency), tuberculosis, venereal disease, respiratory infections, maternal and child care (again, nutrition was most important), infant diarrhea, and immunization. Vaccines were given as they became available, including diphtheria and smallpox. Along with the above came better surgical and orthopedic care, hospitalization where needed, and diagnostics to discover disease. This included x-rays for tuberculosis and testing of infants for anemia which was done on a wide basis during the 1930s.

The economic development of the Islands certainly proceeded in parallel with the growth of sugar and pineapple production, and medical care went hand in hand. The 103,000 people constituted a little less than a third of the entire Island population of about 368,000. The availability of medical care graduated from sporadic coverage to full coverage by the individual plantations, and then to an industry-wide medical care system. Originally care was provided free, but some time after the labor unions came, costs were levied on the members. The charges were extremely low and did not represent the full expense to the plantations.

We don't have much information before the 1880s. Early pioneers included missionary doctors such as Dr Gerrit P. Judd in the 1850 era. Judd cared for all comers, with repayment being the possible conversion of patients to Christianity.

In 1888 Dr Luis F. Alvarez served as the doctor in Waialua, Oahu covering plantation and non-plantation patients alike. His son, Walter, witnessed kitchen-table appendectomies and amputations. Dr Walter Alvarez subsequently became a consultant of national renown in the field of internal medicine. The site of his home was behind the present Waialua district gymnasium in Haleiwa.

Dr Charles Davis described medical care in an article in 1904.[1] It appears that the art of medicine prevailed over the science. Dr Davis, who was then the Ewa Plantation physician, displayed much humanity for foreign laborers. He says, "I treated over 180 patients every day of the year." His philosophy included removal of the *causae morbi*. "I would let no man go from my office who thinks he is sick, empty-handed." Also, "Pass not idly by the patient who thinks he is sick, for indeed he is." For diarrhea he gave cathartics such as calomel and then sedation with tincture of opium.

He comments that Ewa patients were young, healthy, robust men. This accounted, Davis said, for the "rapid healthy granulation of stumps and healing of wounds." He notes, however, that abscesses took on "a rapid phagodenic action running halfway up the leg...in 24 hours...and freely opened such infections."

He describes beriberi, at that time thought to be transmitted from one person to another. As treatment for severe beriberi cases he prescribed bismuth subnitrate with 1/15 grain of strychnine sulfate and Blaud's pills and then he carefully regulated the diet. His treatment was successful. (Thank goodness for diet!)

Subsequent plantation physicians included Dr Fred Irwin and Dr L.D. Sexton, who, in the tradition of general practitioners at the time, traveled by buggy through muddy roads to do deliveries, appendectomies, etc, with instruments sterilized in the kitchen. Typhoid fever was a particular problem during 1906 to 1907. Hospitals were few at the turn of the century, but by the 1930s each plantation had its own or shared one with an adjacent plantation.

In 1930, the Hawaii Sugar Planters Association (HSPA) appointed Nils P. Larson MD[2] as medical advisor, and with his help, strove to improve plantation workers' health through a study of diet and the use of supplements to the polished white-rice diet the workers and their families preferred. Other facets of health needs were also studied. The plantation bulletin, *Plantation Health*,[3] disseminated information to physicians discussing and helping to solve common problems. Dr Charles Wilbar was the editor and Dr Larson was the plantation consultant for *Plantation Health*. An organization for plantation physicians was formed, and periodic meetings were held with speakers on pertinent topics.

Dr Wilbar headed the Ewa Experimental Health Center at Ewa Plantation. Through this program, plantation children were checked for anemia, parasites, and other possible illnesses. Formula for infants and supplements for children were supplied on that plantation (in conjunction with the Board of Health and Queen's Hospital Research Department). Infant formula of evaporated milk and water plus a special run of cane syrup was distributed; cod liver oil, orange juice, guava juice which is high in vitamin C, brewer's yeast, and so on were also provided to infants.

The Ewa Project planted vegetable gardens and developed a *fruit tree project*. These gardens were formulated to supplement the white rice diet, which was responsible in many instances for beriberi and other types of malnutrition. The garden and fruit projects were started at the other plantations as well and nutritional information was disseminated.[4]

Dr Thomas Keay of Pepeekeo wrote in the 1930s that the sugar industry needed healthy workers. "Laborers are engaged to work, the men want to work. It's the duty of the medical service to keep

the men in the field in good physical condition...the babies of today are the field workers of tomorrow." He said that in 1922, when he began practice, there was a high infant mortality rate (66 per 1,000 live births), especially among Japanese and Filipino babies, which he believed was at least in part related to malnutrition. This figure decreased to 16 infant deaths per 1,000 by 1935, which Dr Keay thought was partially due to food education.[5] Obstetric problems from home deliveries were frequently a problem. Later most deliveries were in hospital.

Positive serologies were found in 10% of one group of 9,000 Wasserman tests, which included prenatal and pre-employment exams, and family members of the workers. There was only a small percentage of clinical syphilis, however. Twelve-week cyclic injections of arsenicals and then bismuth were given. Leptospirosis was identified clinically and then verified through guinea pig inoculations.

Apparently, in those days, Filipino laborers were more susceptible to nutritional disease as a result of their three-year contracts. Since they expected to return shortly to the Philippines, they often were content with an almost exclusive white rice diet in order to save money. Subclinical prevalence of malnutrition detracted from general health and vigor. Even today, older Filipino patients refer to cardiac edema as *beriberi*. Many of the Filipino laborers, after completing their contract, returned home to the Philippines. Then, having married and fathered a child, they came back to work for another number of years. Once it was discovered that lack of vitamin B_1 was the cause of beriberi, it was added to the diet in the 1930s.

Most people in the islands still take white rice in preference to the more nutritious brown rice. However, it seems that most of the people in my current practice, except possibly the Hawaiian group, have good quantities of vegetables in their diet.

Plantation physicians were required to be graduates of acceptable medical schools, to be competent in their fields, and to be dedicated and well-trained. Generally, only one doctor cared for the needs of each plantation—this included 8,000 to 10,000 people at times. In the 1930s a second physician was added. Surgery and obstetric skills, if not already learned, had to be acquired, often through a preceptor relationship. Access to specialty care was increased as the standards for medicine improved nationwide. The vast majority of accidents and illnesses were handled locally, though consultations were obtained when needed.

Personal Observations

When I was employed as a physician at Waialua Sugar Plantation, the sugar industry was of utmost importance in Hawaii and economically was second only to the military. My family and I left a rural practice in Colorado and arrived at the Waialua Plantation in 1961. I was given a tour of the plantation which was quite useful in that I understood where industrial accidents might occur and what health problems might be related to individual jobs.

The most impressive aspect of the plantation was the relative self-sufficiency of the organization. Many developments had occurred in the years since the founding of the plantation by Castle & Cooke in 1898. Irrigation (though now through disposable irrigation drip lines) still uses the original rock and mortar flumes that in turn disperse water over contoured fields. Also, an irrigation well, more than 100 feet deep with access by elevator, was built with plantation labor. A dam was constructed in 1902 of boulders and earth which formed a reservoir, Lake Wilson, for a water supply. Large siphons transported water across deep valleys. The mill, of course, had machine shops and multiple other integrated functions. All of these were under the administration of the manager and his supervisors.

One of HSPA's primary purposes was to supply technical advice including recommendations of new varieties of cane, weed control, fertilization tables, and other technological support. In addition it supported the plantation physicians organization in its efforts to provide better health.

Waialua Clinic was part of the hospital and included a small emergency room, reception and chart area, pharmacy, and examination rooms. It was originally designed for one physician; my request for a better office was incorporated into other suggestions for the hospital. We were able to upgrade and renovate where needed and the manager, Harry Taylor, and the senior physician, Dr F.H. Hatlelid, were supportive of the improvements.

The hospital and clinic included x-ray which was the *kuleana* of a versatile Filipino man who was responsible for various tasks as well as x-ray, and he could do anything including settling disputes and being an interpreter. His knowledge and ambition helped family members to become medical and nursing professionals. The lab was run by a technician who lived on the grounds and was available at all times. Periodically she could be seen at night with a flashlight looking for *Bufos* for pregnancy testing a patient's urine.

There were two wards and several private rooms. There was a delivery room and an OR. The RNs lived adjacent to the hospital, and practical nurses lived in the community. There was a hospital kitchen and a laundry. These functions were largely under the administration of the senior physician, Dr Hatlelid, and then later, me. Other administrative functions, such as salaries and cost control, were under the purview of the comptroller's office and his staff.

Physicians were expected to do the bulk of all care including orthopedics, dermatology, internal medicine, pediatrics, obstetrics and gynecology, and surgery within our capabilities. Emergencies were handled locally when possible. On more than one occasion a mother would bring in an oversized daughter in a muumuu with acute abdominal distress, which was resolved by an unexpected delivery. Self-administered Trilene through a small hand-held mask combined with pudendal blocks worked extremely well for deliveries, until it was abandoned because of some reported problems. We kept O-negative blood available for emergencies, and a patient could be transferred when stabilized, or maintained in Waialua when indicated.

Surgical, obstetric, and orthopedic consultants would respond for operative fractures, gastric surgery, and C-sections, though we did these ourselves later during my stay. There was one memorable accident on a New Year's day. Five adolescent casualties were brought in with wounds sustained from the explosion of a Coke bottle that had been filled with powder from unexploded firecrackers from the night before. One young man sustained a transection of his ilio-femoral artery and vein, and he nearly exsanguinated. I was able to access a vein as he was gasping his last breath, and give him O-negative blood and saline. As the blood was administered, he gradually picked up his respiration and other vital signs; we all heaved a sigh of relief. Meanwhile, we called Dr Scott Brainard, a cardiovascular surgeon who was visiting at his nearby beach home. With the help of his wife, a surgical nurse, the vessels were repaired. The other children had lesser wounds although shards of glass kept surfacing and had to be removed in later years.

There was essentially no ambulance service. We responded to major auto accidents at the site, or the patients were brought to our emergency room. The hospital/clinic also accepted private patients from the community as there were few other physicians available, thus providing a needed service to the community. This also helped defray costs to the hospital through private payments; such arrangements were common throughout the plantation system.

Indigents were treated at Waialua Sugar since the senior physician

was designated the Queen's Hospital physician for the Waialua District. Patients were treated on a very limited allowance. Because of the inadequate allowance, Harry Taylor, who was the manager during my stay, subsidized cost overruns from month-to-month for the drugs needed for such patients. The buck stopped with the manager who, incidentally, held special stature in the community.

My experience was that, where indicated, specialty care such as orthopedics or heart surgery was paid for by the plantation. However, such expenditures were closely scrutinized and costs were balanced against tons of sugar produced in order to provide care.

The different cultural groups and individual employees and families made the Waialua Clinic practice special. There were Caucasians (British, American, Scottish—usually managers), Portuguese (who didn't want to be classified as Caucasian or haole), Spanish, Puerto Rican, Chinese, Chinese-Hawaiians, Japanese, Koreans (few), and Filipinos. Each group had its own diversified language, culture and talents. Pidgin crossed most language barriers.

There was a tiny Japanese woman who was a practical nurse in the clinic, Sugi-san, who taught me a few very correct Japanese words and phrases which were helpful with the older population who did not speak much English. The younger Japanese had progressed to skilled jobs (supervisory, secretarial). I found them to be a proud, family-oriented group. A few close loyalties with the people with whom I worked were formed.

One of the largest families was Chinese/Hawaiian/Portuguese. They befriended us and made us feel part of the plantation family. Their luaus were special with good music, food, and hula performed by the sisters. The majority knew how to hula, especially with the eyes and the hands. The brothers were plantation supervisors in the field operation.

Adjusting to plantation life was interesting, including accommodating to the patriarchal hierarchy and becoming accustomed to different cultures. There were the *hana hana girls* who wore heavy protective clothing in the fields and were usually middle-aged Japanese women.

My wife was warned when adjacent cane fields were to be burned, producing *Hawaiian snow*. When she spoke of the resulting extra cleaning the stock answer was, "It's your bread and butter." One special memory was of being invited to see off friends on the *Lurline*. There were parties throughout the ship; singing, dancing, then the confetti, and the band playing as the ship departed, listing to larboard with the weight of all the passengers throwing out their leis and waving goodbye.

An RN who worked many years for Waialua Sugar from before World War II describes cases of gas gangrene, tetanus (before tetanus toxoid became available), and cane-knife wounds, and says in her opinion medicine and nursing did well with the available drugs and equipment. She believes the personal aspects of care rendered before surpasses in quality the impersonal care available now. As a camp nurse she visited many outlying camp clinics, doing immunizations, offering formula and food supplements, and dispensing medicines. She travelled 1,000 miles in a month on those rounds. Dr A.L. Davis, of British origin, was the only physician present in the earlier part of her service. She knows of him privately supporting the family of an impaired father. She recounts that Dr Davis made the winner in machete fights pay the surgical bill, even though medical care was usually provided free.

The paternalistic system not only furnished medical care but also housing, free kerosene, and bath houses. It seems this paternalistic philosophy created a modern widespread perception of the need to seek care for even trivial illnesses and also for expensive insurance to cover minor complaints.

On the other hand, plantation medicine helped to develop excellent medical care throughout Hawaii. Development of modern medicine in Hawaii to a great extent parallels the development of plantation medicine, just as our modern ethnic diversity resulted from the requirements for labor by these industries. Over a period of 150 years dedicated plantation physicians, nurses and other professionals led to improved care and excellent medicine in modern times. We owe much to the pioneer plantation physicians, as well as their mentor, Nils Larsen.

Today many of our health professionals are descendants of the plantation patient population. This is truly a testimony to the opportunities afforded those who came to live in Hawaii.

References

1. Davis CA. The plantation doctor. *Hawaii Medical Association Transactions of the Annual Meeting.* 1904; 86-98.
2. Dr Nils Larson was a pioneer in many facets of medicine during the 1920s and 1930s and was instrumental in upgrading and modernizing Queen's Hospital. He served in various capacities for that hospital and his portrait is seen in exhibits in the hallways. He was instrumental in gathering statistics and helped formulate the program and efforts of the plantation physicians. He helped found the Honolulu Medical Group and seemed to be tireless. He is one of the true pioneers of medicine in this state and should serve as an inspiration for all, including young physicians.
3. *Plantation Health.* (Periodical) Honolulu. 1936-1964. Much of the historical information is derived from this source.
4. There was a program for high school students to work in the fields which was good training. My oldest son participated one summer. They loaded fertilizer in a plane for spreading over the different fields and then worked until the pilot came back. One time he flew low and yelled, "Somahaiya!" (Summer hire), which sounded like *bonsai* and he released the residual fertilizer on the working crew.
5. Plantation statistics for the state through 1960 were: Infant Mortality per 1000 live births; 61 in 1935-39, 13.4 in 1951-55, 16.9 in 1956-60.